

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 20500250SJ		FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/SG2005/000043	International filing date (day/month/year) 17 February 2005	(Earliest) Priority Date (day/month/year) 17 February 2004	
Applicant NANYANG TECHNOLOGICAL UNIVERSITY et al			

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.
This international search report consists of a total of 4 sheets.
☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.
- ☐ **Certain claims were found unsearchable** (See Box No. II).
- ☐ **Unity of invention is lacking** (See Box No. III).
4. With regard to the **title**,
☒ the text is approved as submitted by the applicant.
☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

- ☐ the text is approved as submitted by the applicant.
☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the **drawings**,

- a. the figure of the **drawings** to be published with the abstract is Figure No. **1A**
☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

A colour sensor semiconductor device includes a conducting channel (130) formed beneath a substrate surface with a pre-determined photo-conductivity spectral response. The channel is formed between two pn-junctions (126,128) defining first and third photo-electric depletion regions at respective depths relative to the surface corresponding to the penetration depths of light of different wavelengths. The first region (106) which has the light absorbing surface (104) above the first pn-junction (126) is specific to a first colour. The channel region (130) between the two pn-junctions (126, 128) is photo-conductive to a second colour. The third region below the second pn-junction (128) is sensitive to a third colour. Electrical contacts (118,120,122,124) are disposed on the source (112), the top gate (106), the drain (114) and the bottom gate (116) for receiving the electrical currents induced by the presence of the absorbed wavelengths.

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. 7: H01L 27/146, G01J 3/46

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 DWPI and JAPIO: (H01L or G01J) and ((COLOUR or SPECTRUM or WAVELENGTH or FREQUENCY) with
 (SENSOR or DETECTOR or MONITOR)) and PN JUNCTION and (PHOTO+ or (THREE OR THIRD))

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	EP 1 006 585 A (HEWLETT-PACKARD COMPANY) 7 June 2000 See abstract and fig. 2.	1-6,19,20,22, 27,28,32-41
X	US 5 965 875 A (MERRILL) 12 October 1999 See abstract, claim 1, col 5 line 1-30	1-7,10-12, 19-22,24-28, 32-41
A	US 5 113 076 A (SCHULTZ) 12 May 1992 See claims.	
A	US 4 318 115 A (YOSHIIKAWA et al) 2 March 1982 See abstract and col 8 line 34 to end.	
X	Patent Abstracts of Japan, JP 07-038136 A (SONY CORP) 7 February 1995 Derwent Abstract Accession No. 92-267295/32, Class S03 SU 1 689 768 A (PRIVEZENTSEV V V) 7 November 1991	1,3-6,10-12, 19,32-41 1,3-6,10-12, 19,32-41

☐ Further documents are listed in the continuation of Box C
 ☒ See patent family annex

* Special categories of cited documents:	"A"	"T"	"L"	"O"	"P"
document defining the general state of the art which is not considered to be of particular relevance	document published after the international filing date and not in conflict with the application but cited to understand the principle or theory underlying the invention	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	document referring to an oral disclosure, use, exhibition or other means	document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search

8 April 2005

Date of mailing of the international search report

04 MAY 2005

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Patent Document Cited in		Search Report		Patent Family Member	
EP	1 006 585	JP	2000/174324	US	6 111 300
US	5 965 875	CN	1 298 483	EP	1 078 233
		US	6 606 120	US	2003/169359
		WO	2000/062350	WO	1999/056097
US	5 113 076	JP	11/295145	NL	91/00637
US	4 318 115	JP	55/016494	JP	55/019833
		JP	55/046557	JP	55/026661
JP	07-038136	NONE			
SU	1 689768	NONE			

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.